Arguments/Remarks

The applicant has amended independent claims 1, 10, and 13. Claims 1-5, 10, and 12-15 are presented for examination.

The presently claimed invention encodes data for wireless transmission in part by mapping symbols in a data stream to different subbands of carrier frequencies. As a significant feature, a communications spectrum is divided into a number of subbands, with each subband including a number of adjacent-frequency carriers. By allocating sequential symbols to different subbands, the claimed methods and systems help to ensure that sequential symbols are generally (but not necessarily) transmitted on non-adjacent carriers. The claims have been amended to clarify this inventive concept.

35 U.S.C. § 103

The examiner has rejected the claims under 35 U.S.C. § 103 as unpatentable over U.S. Pat. No. 6,421,333 to Jalaili ("Jalaili") variously in view of U.S. Pat. No. 5,548,582 to Brajal et al. ("Brajal"), U.S. Pat. No. 6,5199,731 to Huang et al. ("Huang"), U.S. Pat. No. 6,577,670 to Roberts ("Roberts"), and U.S. Pat. No. 6,426,983 to Rakib et al. ("Rakib").

More specifically, the examiner has rejected independent claim 1 as obvious in view of Jalaili and Brajal. Jalaili discloses a technique for spreading symbols among carriers by reading data into columns of a matrix and reading data out from rows of the matrix. ("The system arranges the symbols by writing them into the matrix according to columns [and then] retrieves the symbols from the matrix according to rows, from top to bottom and transmits the retrieved symbols on different carrier frequencies such that consecutive symbols are each transmitted on a different carrier frequency" Col. 2, lines 22-29). While this technique may achieve some frequency diversity for transmitted data, it does so in a way that is fundamentally different from the claimed invention. In the present application, the claimed interleaver maps each symbol to a *different subband*, within which a variety of spread spectrum and other techniques may be employed to allocate the symbol to a particular carrier. By contrast, Jalaili maps each symbol directly to a *carrier*. ("The inverse multiplexer then sends the [symbols] on carriers f3, f4, . . ., fl until n symbols are transmitted on each of the n carriers." Col. 3, lines 31-34).

Brajal also does not disclose the presently claimed invention. Rather, Brajal discloses a system that achieves frequency diversity using a frequency hopping system that mixes symbol order in addition to mixing carrier frequency:

> At the output of the mixing means 11 the sampled symbols are no longer in the same order as they had when entering. The revised order is a function of a mixing command SA which assigns to each sampled symbol a series [of] carrier frequencies of a [multicarrier] modulation, the assignments being the object of frequency jumps.

Col. 7, lines 5-10. Brajal does not supply the claimed features that are missing from Jalaili. These references do not -- even in combination -- teach or suggest an interleaver that maps symbols to different subbands, each of which includes a number of adjacent carriers. These references cannot render the invention of claim 1 obvious.

The additional references similarly do not teach or suggest the claimed invention. Roberts discloses a programmable filter for preventing interference between direct sequence spread spectrum communications and frequency hopping spread spectrum communications. Huang discloses techniques for packet numbering in an adaptive-rate wireless communication system. Rakib discloses the use of a filter bank to excise narrowband signal interference in a CDMA system. None of these references teach or suggest the use of an interleaver that maps symbols to a plurality of subbands as presently claimed.

The remaining independent claims contain features analogous to claim 1, and are similarly not rendered obvious by the art of record.

Independent claim 10 recites a method including the step of *interleaving each symbol of one of the symbol blocks across a plurality of coherent subbands, each one of the plurality of coherent subbands including two or more adjacent carriers, wherein each symbol from each one of the symbol blocks is mapped to a different one of the plurality of coherent subbands*. For the same reasons provided above, this claim is patentable over the prior art of record.

Independent claim 13 recites a system including *an interleaver to map each one of the plurality of symbols from each one of the plurality of symbol groups into a corresponding different one of a plurality of coherent subbands, each one of the plurality*

of coherent subbands including two or more adjacent carriers. For the same reasons provided above, this claim is patentable over the prior art of record.

Because the independent claims are patentable over the art of record, the claims depending therefrom are also patentable.

Conclusion

For the foregoing reasons, all of the pending claims are believed to be patentable over the art of record, and a Notice of Allowance is respectfully requested for same. Allowance is earnestly solicited, and the Examiner is invited to contact the undersigned (781) 453-9993 if it will expedite prosecution of this application.

The applicant hereby authorizes the Patent Office to charge any deficiencies or credit any overpayments associated with this filing to Deposit Account No. 50-4262.

Respectfully submitted,

STRATEGIC PATENTS, P.C.

/Robert Mazzarese/
Robert A. Mazzarese
Reg. No. 42,852

August 21, 2007